

CLAIMS

What is claimed is:

- Sub 34
1. A portable surface cleaning apparatus, comprising:
 - a base housing adapted for movement along a surface to be cleaned;
 - an upright handle pivotally mounted to the base housing;
 - a liquid dispensing system mounted at least in part to the base housing and
 - 5 comprising:
 - a first liquid dispenser associated with the base housing for applying liquid to a surface to be cleaned;
 - a liquid supply tank for holding a supply of cleaning liquid;
 - a first liquid supply conduit fluidly connected to the liquid supply tank and
 - 10 to the first dispenser for supplying liquid to the first dispenser;
 - a second liquid dispenser separate from the base housing and including a spray nozzle for dispensing liquid onto a surface to be cleaned; and
 - a second liquid supply conduit fluidly connected to the liquid supply tank and to the second dispenser for supplying liquid to the second dispenser;
 - 15 a cleaning fluid pump for delivering cleaning fluid from the liquid supply tank at least in part to the second liquid dispenser;
 - a liquid recovery system comprising:
 - a recovery tank mounted on the base housing and having a liquid recovery chamber for holding recovered liquid;
 - 20 a suction nozzle associated with the base housing and adapted to draw dirty liquid from the surface to be cleaned;
 - a working air conduit extending between the recovery chamber and the suction nozzle;
 - 25 an above-floor hose connected at one end to the recovery tank and an open end for alternatively recovering liquid from the open end through the above-floor hose,

the above-floor hose carrying the second liquid supply conduit and mounting the second liquid dispenser at the open end thereof;

30 a vacuum source in fluid communication with the recovery chamber for generating a flow of working air from the nozzle through the working air conduit, or alternatively from the open end of the above-floor hose, and through the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the nozzle and working air conduit, or from the open end of the above-floor hose and into the recovery chamber to thereby recover the dirty liquid from the surface to be cleaned; the improvement comprising:

35 a fluid reservoir mounted to the second liquid dispenser for dispensing a fluid onto a surface; and

a fluid reservoir pump mounted to the second liquid dispenser for drawing fluid from the reservoir and for spraying the fluid onto the surface along with the fluid from the liquid supply tank.

2. A portable surface cleaning apparatus according to claim 1 wherein the fluid reservoir pump is an aspirator.

3. A portable surface cleaning apparatus according to claim 2 wherein the second liquid dispenser is without a suction nozzle opening.

4. A portable surface cleaning apparatus according to claim 2 wherein the second liquid dispenser has a vent opening for venting suction in the hose to the atmosphere.

5. A portable surface cleaning apparatus according to claim 4 wherein the second liquid dispenser and the reservoir have a quick connect mechanism for removably mounting the reservoir to the second liquid dispenser.

6. A portable surface cleaning apparatus according to claim 5 wherein the quick connect mechanism includes an open neck on an upper portion of the reservoir.

7. A portable surface cleaning apparatus according to claim 6 and further comprising a cap for mounting to the open neck of the reservoir when the reservoir is

removed from the second liquid dispenser for sealing the reservoir when the reservoir is removed from the second liquid dispenser.

8. A portable surface cleaning apparatus according to claim 7 wherein the neck is threaded and the cap is threaded onto the neck.

9. A portable surface cleaning apparatus according to claim 8 wherein the reservoir is vented through the threads on the neck.

10. A portable surface cleaning apparatus according to claim 8 wherein the quick connect is a bayonet connection.

11. A portable surface cleaning apparatus according to claim 1 wherein the second liquid dispenser has a vent opening for venting suction in the hose to the atmosphere.

12. A portable surface cleaning apparatus according to claim 1 wherein the second liquid dispenser and the reservoir have a quick connect mechanism for removably mounting the reservoir to the second liquid dispenser.

13. A portable surface cleaning apparatus according to claim 12 wherein the quick connect mechanism includes an open neck on an upper portion of the reservoir.

14. A portable surface cleaning apparatus according to claim 13 and further comprising a cap for mounting to the open neck of the reservoir when the reservoir is removed from the second liquid dispenser for sealing the reservoir when the reservoir is removed from the second liquid dispenser.

15. A portable surface cleaning apparatus according to claim 14 wherein the neck is threaded and the cap is threaded onto the neck.

16. A portable surface cleaning apparatus according to claim 15 wherein the reservoir is vented through the threads on the neck.

17. A portable surface cleaning apparatus according to claim 12 wherein the quick connect is a bayonet connection.

18. 16. A portable surface cleaning apparatus according to claim 1 and further comprising a body of a liquid surface protectant composition in the reservoir.

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19. A portable surface cleaning apparatus according to claim 1 and further comprising a body of liquid stain repellent composition in the reservoir.

20. A portable surface cleaning apparatus according to claim 1 and further comprising a body of a liquid miticide composition in the reservoir.

21. A portable surface cleaning apparatus according to claim 1 wherein the liquid recovery system further comprises a switch for selectively operating the vacuum source independent of the pump.

22. A portable surface cleaning apparatus according to claim 1 wherein the second liquid dispenser is void of a suction nozzle.

23. A spray applicator for attachment to a portable surface cleaning apparatus having a combination vacuum hose and fluid delivery conduit, comprising:

a unitary body having a suction opening at one end adapted to sealingly connect to the vacuum hose and further having a nozzle pressure conduit that is adapted to fluidly

5 connect to fluid delivery conduit at one end thereof;

a reservoir mounted to the unitary body;

a spray nozzle connected to another end of the nozzle pressure conduit; and

a fluid reservoir pump in the nozzle pressure conduit and connected to the reservoir for drawing fluid from the reservoir and mixing the reservoir fluid with liquid in
10 the nozzle pressure conduit for spraying a mixture of fluid from the reservoir and fluid from the fluid delivery line onto a surface.

24. The spray applicator according to claim 23 wherein the unitary body further comprises a vent connected to the suction opening for venting suction in the vacuum hose to atmosphere.

25. The spray applicator according to claim 24 wherein the unitary body is void of a suction nozzle.

26. The spray applicator according to claim 23 wherein the fluid reservoir pump is an aspirator.

27. The spray applicator according to claim 23 and further comprising a body of liquid protectant within the reservoir.

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~~25~~²³ 26. The spray applicator according to claim ~~25~~²³ and further comprising a body of liquid miticide within the reservoir.

~~29~~²³ 27. The spray applicator according to claim ~~27~~²³ and further comprising a body of at least one of a liquid stain repellent composition, a liquid miticide composition and a liquid mildew resistant composition in the reservoir.

~~30~~²³ 28. The spray applicator according to claim ~~27~~²³ wherein the second liquid dispenser and the reservoir have a quick connect mechanism for removably mounting the reservoir to the second liquid dispenser.

~~31~~³⁰ 29. The spray applicator according to claim ~~28~~³⁰ wherein the quick connect mechanism includes an open neck on an upper portion of the reservoir.

~~32~~³¹ 30. The spray applicator according to claim ~~29~~³¹ and further comprising a cap for mounting to the open neck of the reservoir when the reservoir is removed from the second liquid dispenser for sealing the reservoir when the reservoir is removed from the second liquid dispenser.

~~33~~³² 31. The spray applicator according to claim ~~30~~³² wherein the neck is threaded and the cap is threaded onto the neck.

~~34~~³³ 32. The spray applicator according to claim ~~31~~³³ wherein the reservoir is vented through the threads on the neck.

~~35~~³⁰ 33. The spray applicator according to claim ~~28~~³⁰ wherein the quick connect is a bayonet connection.

~~36~~²³ 34. The spray applicator according to claim ~~24~~²³ wherein the reservoir has a generally cylindrical sidewall, a bottom wall and a top wall, and wherein the a portion of the bottom wall extends at an acute angle to the sidewall at a position beneath the spray nozzle.

~~37~~³⁶ 35. The spray applicator according to claim ~~34~~³⁶ wherein the acute angle is in the range of about 30 to 60 degrees.

~~38~~³⁶ 36. A portable surface cleaning apparatus comprising:
a housing;

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a first tank connected to the housing and having a body of a liquid protectant composition therein;

5 a second tank mounted to the housing and having a body of water therein;

a spray nozzle; and

a fluid delivery system having an inlet in fluid communication with each of the first and second tanks and an outlet in fluid communication with the spray nozzle for spraying a mixture of the liquid protectant and water onto a surface.

³⁹₃₇. The portable surface cleaning apparatus of claim ³⁸₃₇ and further comprising a mixing valve having an inlet in fluid communication with each of the first and second tanks and an outlet in communication with the fluid delivery system; and wherein the mixing valve is selectively adjustable to control a desired amount of

5 protective composition in mixture delivered to the spray nozzle.

⁴⁰₃₈. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the protectant composition is a stain repellant.

⁴¹₃₉. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the protectant composition includes a miticide.

⁴²₄₀. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the protectant composition includes a mildew repellant.

⁴³₄₁. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the pump is an aspirator.

⁴⁴₄₂. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the first tank is connected to the housing through a suction hose.

⁴⁵₄₃. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the first tank is mounted on the housing.

⁴⁶₄₄. The portable surface cleaning apparatus of claim ³⁹₃₇ wherein the fluid delivery system includes a pump that is mounted on the housing and supplies water under pressure to the spray nozzle.

⁴⁷₄₅. The portable surface cleaning apparatus of claim ³⁹₃₇ and further comprising a fluid recovery system which includes a suction nozzle mounted to the

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- housing, a recovery tank mounted to the housing, a working air conduit extending between the recovery chamber and the suction nozzle; and a vacuum source in fluid communication with the recovery tank for generating a flow of working air from the nozzle through the working air conduit and through the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the nozzle and working air conduit and into the recovery tank.
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- 48/46.10 A portable surface cleaning apparatus comprising:
- a base housing adapted for movement along a surface to be cleaned;
 - an upright handle pivotally mounted to the base housing;
 - a liquid dispensing system mounted at least in part to the base housing and
- 5 comprising:
- a liquid dispenser associated with the base housing for applying liquid to a surface to be cleaned;
 - a liquid supply tank with a body of a liquid protectant solution;
 - a liquid supply conduit fluidly connected to the liquid supply tank and to
- 10 the dispenser for supplying the liquid protectant solution to the liquid dispenser; and
- a fluid delivery system for delivering the liquid protectant solution from the liquid supply tank to the liquid dispenser;
 - a liquid recovery system comprising:
- a recovery tank mounted on the base housing and having a liquid recovery
- 15 chamber for holding recovered liquid;
- a suction nozzle associated with the base housing and adapted to draw dirty liquid from the surface to be cleaned;
 - a working air conduit extending between the recovery chamber and the suction nozzle;
- 20 a vacuum source in fluid communication with the recovery chamber for generating a flow of working air from the nozzle through the working air conduit and through the fluid recovery chamber to thereby draw dirty liquid from the surface to be

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cleaned through the nozzle and working air conduit, and into the recovery chamber to thereby recover the dirty liquid from the surface to be cleaned.

~~49~~⁴⁸ 47.4 The portable surface cleaning apparatus according to claim ~~46~~⁴⁸ wherein the liquid protectant is a liquid stain repellent composition.

~~50~~⁴⁸ 48.5 The portable surface cleaning apparatus according to claim ~~46~~⁴⁸ wherein the liquid protectant is a liquid miticide composition.

~~51~~⁴⁸ 49.51 The portable surface cleaning apparatus according to claim ~~46~~⁴⁸ wherein the liquid protectant is a liquid mildew repellent composition.

~~52~~⁵⁰ 50.51 A method of applying a liquid protectant solution to a surface comprising the steps of:

5 placing the liquid protectant solution into a dispensing tank in an extraction cleaning machine which includes the dispensing tank, a dispenser for applying a solution to a surface to be cleaned in fluid communication with the dispensing tank, and wherein the extraction cleaning machine further includes a liquid recovery system for recovering soiled liquid from a surface on which a liquid cleaning solution had been applied;

dispensing the liquid protectant solution in the dispensing tank onto the surface through the dispenser as the extraction cleaning machine is moved over the surface.

~~53~~⁵¹ 51.51 A method of applying a liquid protectant solution to a surface according to claim 50 wherein the surface is a carpeted floor.

~~54~~⁵² 52.52 A method of applying a liquid protectant solution to a surface according to claim 50 and further comprising the step of disabling the liquid recovery system prior to the dispensing step.

~~55~~⁵³ 53.53 A method of applying a liquid protectant solution to a surface according to claim ~~50~~⁵² wherein the dispensing step comprises spraying.

~~56~~⁵⁴ 54.54 A method of applying a liquid protectant solution to a surface according to claim ~~53~~⁵³ wherein the dispensing step includes pumping the liquid protectant solution under pressure to the dispenser.

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A method of applying a liquid protectant solution to a surface according to claim 50 wherein the liquid protectant solution is a liquid stain or mildew repellent composition.

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A method of applying a liquid protectant solution to a surface according to claim 50 wherein the liquid protectant solution is a liquid miticide composition.

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